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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAE-HYUK OH, PEI-YUAN PENG, HOWARD WINSTON, and
ALAN FINN

Appeal 2010-001304
Application 10/561,559
Technology Center 3600

Before DANIEL S. SONG, STEFAN STAICOVICI, and
EDWARD A. BROWN, *Administrative Patent Judges.*

BROWN, *Administrative Patent Judge.*

DECISION ON APPEAL

Jae-Hyuk Oh et al. ("Appellants") appeal under 35 U.S.C. § 134(a) from a Final Rejection of claims 1-3, 6-8, and 11 (App. Br. 2). Pending claims 4, 5, 9 and 10 have been indicated to be allowable and are not on appeal (App. Br. 2). We have jurisdiction over this appeal under 35 U.S.C. § 6(b). We AFFIRM.

The invention is directed to an elevator system that includes electromagnets for producing a repulsive magnetic force which tends to center the elevator car between car followers and control lateral vibration (Abstract; Spec. p. 1, ll. 5-8; p. 5, ll. 16-20). Independent claim 1 is representative of the appealed claims and reads as follows (App. Br. 6, Claims Appx., emphasis added):

1. An elevator system comprising:
a car (28) having a plurality of opposed electromagnets (26); and
*two spaced car follower portions (40) each having an electromagnet (24) facing a corresponding one of said electromagnets on said car, and said car follower portions each being provided with guide structure (42) for moving along a guide rail (25) in an elevator hoistway, *said electromagnets on said car and said car follower portions interacting to provide a repulsive force tending to force said elevator car to be centered between said car follower portions.**

THE REJECTION

Claims 1-3, 6-8, and 11 are rejected under 35 U.S.C. § 103(a) as unpatentable over He (US 6,305,502 B1, issued Oct. 23, 2001) in view of Kurosawa (JP-07215634, published Aug. 15, 1995).

ISSUE

The sole issue that has been raised in the present appeal is whether the Examiner erred in concluding that it would have been obvious to combine He and Kurosawa to result in an elevator system that includes electromagnets on a car and electromagnets on car follower portions that interact to provide a repulsive force which tends to force the elevator car to be centered between the car follower portions as recited in claim 1.

ANALYSIS

Regarding independent claim 1, the Examiner finds that He discloses an elevator system comprising an elevator car platform 202 (i.e., car) with reaction plates 210, and two spaced stiles 118 (i.e., car follower portions) which each have an electromagnet 216 that faces a corresponding reaction plate 210 on the car platform 202 to provide an attractive force, "in lieu of a repulsive force" (Ans. 3, 5; *see* He col. 4, ll. 40-43; col. 5, ll. 44-54 & 56-59; FIGS. 1, 8). The Examiner finds that He's electromagnet / reaction plate pairs counteract each other (Ans. 5). He describes that an object of the vibration control system is to control lateral elevator cab floor vibration for improving ride quality (*see, e.g.*, col. 1, ll. 64-66).

The Examiner finds that Kurosawa discloses a plurality of opposed electromagnets 10 of an elevator enclosure car 1 and electromagnets 12 of car portions that interact to provide a repulsive force as an alternative to the system of He for reducing vibrations (Ans. 3; *see* Kurosawa ¶¶ [0008],

[0017]; FIGS. 1, 3)¹. Kurosawa describes that the electromagnets 12 in the embodiment shown in Figure 3 prevent vibration in the horizontal direction (*see* Kurosawa ¶ [0015]). The Examiner also finds that while He utilizes attractive forces of unidirectional electromagnets to center an elevator car, Kurosawa discloses using either attractive electromagnetic force between a magnet and plate, or repulsive electromagnetic force between paired, opposed electromagnets (10-10, 12-12) to maintain a desired gap (Ans. 6; *see* Kurosawa ¶ [0015]). The Examiner concludes that it would have been obvious to one of ordinary skill in the art to modify He with the teaching of Kurosawa for enhanced performance (Ans. 3).

Appellants contend that the Examiner incorrectly finds that He's elevator system includes electromagnets on both the car and the car follower portions, whereas He actually discloses electromagnets 130 mounted on safety planks 120, and reaction plates 134 mounted to the platform 112 (Reply Br. 1-2). This contention appears to be directed to the embodiment of the vibration control system shown in Figure 4 of He (*see* He col. 2, ll. 63-64; col. 3, ll. 45-53). However, the Examiner's rejection discussed *supra* cites to the embodiment of the vibration control system shown in Figure 8 of He for disclosure of electromagnets 216 and corresponding reaction plates 210. Moreover, with respect to the Figure 8 embodiment, we understand the Examiner's position to be that He discloses reaction plates 210 provided on the car platform 202, not electromagnets (*see* Ans. 3). Hence, we do not agree with Appellants' contentions.

¹ All references to Kurosawa herein are to the certified English-language translation of Kurosawa attached to the Examiner's Answer (Ans. 2).

Appellants also contend that He does not teach "interacting" between electromagnets, but rather teaches that the electromagnets 130 only react with the reaction plates 134 using an attractive force, such that respective electromagnets move (pull) the platform relative to the frame in respective opposite directions (Reply Br. 2). However, as noted *supra*, the Examiner does not rely on the embodiment shown in Figure 4 of He for this rejection. In addition, the Examiner finds that "the electromagnets of [He] act unidirectionally and face in opposing directions for purpose of *electromagnetically interacting with their respective 'reaction plate'* to attract said plate and thereby counteract the other paired electromagnet and reaction plate." (Ans. 5) (emphasis added). Hence, we understand the Examiner's position to be that He's respective electromagnets interact with respective reaction plates, not that He's electromagnets interact with each other.

Furthermore, the fact that in He, the electromagnets interact with their respective reaction plates instead of other electromagnets is not dispositive. The Examiner's rejection is based on the combination of He and Kurosawa, Kurosawa clearly teaching the use of electromagnet pairs that interact within the pairing to reduce vibration in an elevator enclosure car.

Appellants also contend that the Examiner's proposed modification of He would change the principle of operation of He's system, and also render the system incapable of achieving its intended result, because He's system relies on attractive magnetic force to accomplish its intended result, without interaction between electromagnets (App. Br. 4-5; Reply Br. 2-3).

Appellants contend that the modification of He would include a force in an

opposite direction and eliminate the reactive plate that completes the magnetic flux, causing He to work in an opposite manner as it is described (Reply Br. 3).

These contentions are not persuasive. We agree with the Examiner that Appellants have not shown that the proposed modification of He in view of Kurosawa would destroy He's principle of operation or intended result (Ans. 6). In this regard, as noted *supra*, Kurosawa discloses that opposed electromagnets that produce repulsive forces, *or* electromagnets that produce attractive forces, can be used to prevent horizontal vibration of an elevator car. Hence, Kurosawa clearly teaches interchangeability in the use of electromagnetic forces (i.e., attractive or repulsive) that result from different arrangements of the electromagnets to prevent vibration in an elevator car. Modifying He's system to use electromagnets that produce repulsive magnetic forces as taught by Kurosawa would result in the system still using magnetic forces produced by electromagnets to control lateral vibration of an elevator cab, that is, the system would still use the same principle of operation. In addition, Appellants have not shown through evidence that modifying He's system to use electromagnets that produce repulsive magnetic forces would somehow render the modified system unable to achieve the intended result of controlling lateral elevator cab floor vibration.

Hence, we agree with the Examiner's conclusion that it would have been obvious to one skilled in the art to modify He's system according to known methods by substituting the electromagnets of He that produce attractive magnetic forces with the electromagnets of Kurosawa that produce repulsive magnetic forces. This substitution of elements would not have

been uniquely challenging to a person of ordinary skill in the art because it is no more than "the simple substitution of one known element for another" with predictable results. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). Thus, we conclude that the elevator system recited in claim 1 would have been obvious to one skilled in the art in view of He and Kurosawa. Therefore, we sustain the obviousness rejection of claim 1, as well as claims 2, 3, 6, and 7, which depend therefrom.

Independent claim 8 recites similar limitations as those recited in claim 1. Appellants do not argue specific limitations of independent claim 8 separately. Thus, we also sustain the rejection of claim 8, as well as claim 11, which depends therefrom.

CONCLUSION

The Examiner did not err in concluding that it would have been obvious to combine He and Kurosawa to result in an elevator system that includes electromagnets on a car and electromagnets on car follower portions that interact to provide a repulsive force which tends to force the elevator car to be centered between the car follower portions as recited in claim 1.

DECISION

The Examiner's rejection of claims 1-3, 6-8, and 11 as unpatentable over the combination of He and Kurosawa is AFFIRMED.

Appeal 2010-001304
Application 10/561,559

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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